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EXAMINER	
STELLING, LUCAS A	
ART UNIT	PAPER NUMBER
1797	

NOTIFICATION DATE	DELIVERY MODE
11/05/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/574,267	PRASAD, YANDAPALLI DURGA	
	Examiner	Art Unit	
	Lucas Stelling	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,55-67,69-71 and 78-82* is/are pending in the application.

4a) Of the above claim(s) *60-69 and 79-82* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,55-59,69-71 and 78* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8-27-09 has been entered.

Election/Restrictions

2. Newly submitted claim 79-81 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: This application contains claims directed to more than one species of the generic invention. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group 1, claim(s) 1, 55-59, 69-71, and 78, drawn to a first method of controlling microbes.

3. Group 2, claim(s) 79 and 80, drawn to a second method of controlling microbes.

4. Group 3, claim(s) 81 and 82, drawn to a composition of matter.

5. The inventions listed as Groups 1 and 2 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The common technical feature between groups 1 and 2 is the use of copper silicate having a silica copper ratio in the range of 1:0.34 to 1:5.15. Beschke also shows the use of such a copper silicate for anti-fouling of ships. And the biocidal ability of available copper is shown in Samad.

6. The inventions listed as Groups 1 and 3 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The common technical feature between groups 1 and 3 is a copper silicate having a silica copper ratio in the range of 1:0.34 to 1:5.15. Beschke shows such a copper silicate within these ranges.

7. Since applicant has received an action on the merits for the originally presented invention of group 1, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 79-82 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 56 and 78 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Support

for producing a copper silicate compound with a silica to copper ration of 1:1 under acidic conditions was not found in applicant's originally filed disclosure.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claim 56 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 56 requires neutral preparation conditions, but depends from claim 1, which requires acidic conditions. A person having ordinary skill in the art would not know either alone, or in light of applicant's specification, what pH ranges constitute neutral conditions but are also acidic. For purposes of examination it will be interpreted that acidic conditions were intended.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 1, 69-71 and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP08-283013 to Komatsu et al. ("Komatsu").

14. As to claim 1, Komatsu teaches an anti-microbial agent which has copper silicate in a silicate to copper ratio of 1:0.5 to 1:2 **(See abstract CuO/SiO_2 mol**

ratio of 2:1), in which the silicate is prepared by adding a transition metal salt to a soluble alkali silicate under acidic conditions **(Komatsu see abstract copper salt is added to an aqueous alkali silicate solution; the pH of 6.5 is in the acidic range see [0010])**, a precipitate is formed **(Komatsu a product is filtered, dried and perhaps ground which means that it is a solid precipitate see [0023], see also in the examples; a slurry is formed)**, and it is then washed and dried **(Komatsu [0024])**.

15. However, Komatsu is different from claim 1 in that no explicit step of contacting the copper silicate with a one of the enumerated microbes of claim 1 is contemplated. But, Komatsu teaches that the compound is an antibacterial **([0042])**, which may be used as in anti-fouling paints and coatings **([0027] and [0028]**. So a person having ordinary skill in the art would know to coat surface of objects which come in contact with microbes with the compound if antibacterial properties were sought.

16. As to claims 69- 71, microbes (e.g. bacteria, cryptosporidium, apergillus sps, and viruses) of these types are routinely present in natural waters, and therefore it is implicit in the teaching of the reference that the anti-fouling copper silicate agent in Komatsu will contact these microbes. Alternatively, it would be obvious to use the copper silicate of Komatsu in instances when the ships hulls will come in contact with these enumerated microbes in order to prevent biofouling on the ship.

17. As to claim 78, Komatsu teaches an anti-microbial agent which has copper silicate in a silicate to copper ratio of 1:0.5 to 1:2 **(See abstract CuO/SiO_2**

mol ratio of 2:1), in which the silicate is prepared by adding a transition metal salt to a soluble alkali silicate under acidic conditions **(Komatsu see abstract copper salt is added to an aqueous alkali silicate solution; the pH of 6.5 is in the acidic range see [0010])**, a precipitate is formed **(Komatsu a product is filtered, dried and perhaps ground which means that it is a solid precipitate see [0023], see also in the examples; a slurry is formed)**, and it is then washed and dried **(Komatsu [0024])**.

18. However, Komatsu is different from claim 78 in that no explicit step of contacting the copper silicate with a one of the enumerated microbes of claim 78 is contemplated. But, Komatsu teaches that the compound is an antibacterial **([0042])**, which may be used as in anti-fouling paints and coatings **([0027] and [0028])**. So a person having ordinary skill in the art would know to coat surface of objects which come in contact with microbes with the compound if antibacterial properties were sought.

Furthermore, Komatsu does not explicitly contemplate one of the exact silica to copper ratios enumrated in claim 78, however Komatsu teaches adjusting the copper to silica ratio in the reaction solution, which will produce varying concentrations of silica to copper in the final product **(See Komatsu in the examples)**, and Komatsu discusses testing samples in order to find idea concentrations for given uses. Therefore, the ratio of silica to copper in the compound is a result effective variable which controls the biocidal effectiveness in given circumstances. *Discovery of an optimum value of a result effective*

variable in a known process is ordinarily within the skill in the art and would have been obvious, consult In re Boesch and Slaney (205 USPQ 215 (CCPA 1980)).

19. Claims 1, 69-71, and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komatsu in view of U.S. Patent No. 5,474,972 to Sheen et al. ("Sheen").

20. As to claim 1 Komatsu an anti-microbial agent which has copper silicate in a silicate to copper ratio of 1:0.5 to 1:2 **(See abstract CuO/SiO_2 mol ratio of 2:1)**, in which the silicate is prepared by adding a transition metal salt to a soluble alkali silicate under acidic conditions **(Komatsu see abstract copper salt is added to an aqueous alkali silicate solution; the pH of 6.5 is in the acidic range see [0010])**, a precipitate is formed **(Komatsu a product is filtered, dried and perhaps ground which means that it is a solid precipitate see [0023], see also in the examples; a slurry is formed)**, and it is then washed and dried **(Komatsu [0024])**.

21. However, Komatsu is different from claim 1 in that no explicit step of contacting the copper silicate with a one of the enumerated microbes of claim 1 is contemplated. But, Komatsu teaches that the compound is an antibacterial **([0042])**, which may be used as in anti-fouling paints and coatings **([0027] and [0028])**. So a person having ordinary skill in the art would know to coat surface of objects which come in contact with microbes with the compound if antibacterial properties were sought.

22. Also, although it is the position of the examiner that a pH of 6.5 constitutes acidic conditions as discussed above, Komatsu does not discuss more acidic conditions. Sheen teaches that the use of an acidic pH as low as pH 2 produces an amorphous insoluble copper silicate residue, while maintaining the solubility of both the silicic acid and copper silicate in solution during the reaction **(See col. 1 lines 49-62 and col. 2 lines 5-15)**. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of invention to maintain an acidic pH range in order to prevent the unnecessary precipitation of unwanted byproducts during reaction and to produce an insoluble acidic amorphous residue as the desired product.

23. As to claims 69- 71, microbes (e.g. bacteria, cryptosporidium, apergillus sps, and viruses) of these types are routinely present in natural waters, and therefore it is implicit in the teaching of the reference that the anti-fouling copper silicate agent in Komatsu in view of Sheen will contact these microbes. Alternatively, it would be obvious to use the copper silicate of Komatsu and Sheen in instances when the ships hulls will come in contact with these enumerated microbes in order to prevent biofouling on the ship.

24. As to claim 78 Komatsu teaches Komatsu teaches an anti-microbial agent which has copper silicate in a silicate to copper ratio of 1:0.5 to 1:2 **(See abstract CuO/SiO_2 mol ratio of 2:1)**, in which the silicate is prepared by adding a transition metal salt to a soluble alkali silicate under acidic conditions **(Komatsu see abstract copper salt is added to an aqueous alkali silicate solution; the pH of 6.5 is in the acidic range see [0010])**, a precipitate is formed **(Komatsu a**

product is filtered, dried and perhaps ground which means that it is a solid precipitate see [0023], see also in the examples; a slurry is formed), and it is then washed and dried **(Komatsu [0024])**.

25. However, Komatsu is different from claim 78 in that no explicit step of contacting the copper silicate with a one of the enumerated microbes of claim 78 is contemplated. But, Komatsu teaches that the compound is an antibacterial **([0042])**, which may be used as in anti-fouling paints and coatings **([0027] and [0028])**. So a person having ordinary skill in the art would know to coat surface of objects which come in contact with microbes with the compound if antibacterial properties were sought.

26. Also, although it is the position of the examiner that a pH of 6.5 constitutes acidic conditions as discussed above, Komatsu does not discuss more acidic conditions. Sheen teaches that the use of an acidic pH as low as pH 2 produces an amorphous insoluble copper silicate residue, while maintaining the solubility of both the silicic acid and copper silicate in solution during the reaction **(See col. 1 lines 49-62 and col. 2 lines 5-15)**. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of invention to maintain an acidic pH range in order to prevent the unnecessary precipitation of unwanted byproducts during reaction and to produce an insoluble acidic amorphous residue as the desired product.

Furthermore, Komatsu and Sheen do not explicitly contemplate one of the exact silica to copper ratios enumrated in claim 78, however Komatsu and Sheen teaches adjusting the copper to silica ratio in the reaction solution, which will

produce varying concentrations of silica to copper in the final product **(See Komatsu in the examples, and see Sheen col. 3 liens 50-55)**, and Komatsu discusses testing samples in order to find idea concentrations for given uses. Therefore, the ratio of silica to copper in the compound is a result effective variable which controls the biocidal effectiveness in given circumstances. *Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill in the art and would have been obvious, consult In re Boesch and Slaney (205 USPQ 215 (CCPA 1980)).*

27. Claims 55-59 and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komatsu and Sheen in view of Samad.

28. As to claims 55-59, Komatsu and Sheen teach the method of claim 1, and Sheen further contemplates adjusting the concentrations of starting materials for the amorphous copper silicate **(col. 3 lines 50-55)**, and Sheen teaches a pH range of 2 to 6, which covers both acidic and extremely acidic ranges **(See Sheen col. line 49 - 55)**, but Komatsu and Sheen do not contemplate the exact silica to copper ratios contemplated by claims 55-59. Samad teaches that the biocidal power of biocidal copper agents is controlled by the available metal **(Samad col. 1 lines 39-41)**, and the water chemistry at large **(Samad col. 1 lines 33-54).** Komatsu also discusses varying the silica to copper ratio and performs efficacy tests to find suitable ratios **(See Komatsu in the examples).** So the amount of copper in the agent is a result effective variable. Therefore it would have been obvious to a person of ordinary skill in the art at the time of

invention to optimizes the silica to copper ratio in the adjustable copper silicate compound of Komatsu in view of Sheen. *Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill in the art and would have been obvious, consult In re Boesch and Slaney (205 USPQ 215 (CCPA 1980)).*

29. As to claim 78 Komatsu teaches Komatsu teaches an anti-microbial agent which has copper silicate in a silicate to copper ratio of 1:0.5 to 1:2 **(See abstract CuO/SiO_2 mol ratio of 2:1)**, in which the silicate is prepared by adding a transition metal salt to a soluble alkali silicate under acidic conditions **(Komatsu see abstract copper salt is added to an aqueous alkali silicate solution; the pH of 6.5 is in the acidic range see [0010])**, a precipitate is formed **(Komatsu a product is filtered, dried and perhaps ground which means that it is a solid precipitate see [0023], see also in the examples; a slurry is formed)**, and it is then washed and dried **(Komatsu [0024])**.

30. However, Komatsu is different from claim 78 in that no explicit step of contacting the copper silicate with a one of the enumerated microbes of claim 78 is contemplated. But, Komatsu teaches that the compound is an antibacterial **([0042])**, which may be used as in anti-fouling paints and coatings **([0027] and [0028])**. So a person having ordinary skill in the art would know to coat surface of objects which come in contact with microbes with the compound if antibacterial properties were sought.

31. Also, although it is the position of the examiner that a pH of 6.5 constitutes acidic conditions as discussed above, Komatsu does not discuss more acidic

conditions. Sheen teaches that the use of an acidic pH as low as pH 2 produces an amorphous insoluble copper silicate residue, while maintaining the solubility of both the silicic acid and copper silicate in solution during the reaction **(See col. 1 lines 49-62 and col. 2 lines 5-15)**. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of invention to maintain an acidic pH range in order to prevent the unnecessary precipitation of unwanted byproducts during reaction and to produce an insoluble acidic amorphous residue as the desired product.

32. Furthermore, in Komatsu and Sheen, Sheen further contemplates adjusting the concentrations of starting materials for the amorphous copper silicate **(col. 3 lines 50-55)**, and Sheen teaches a pH range of 2 to 6, which covers both acidic and extremely acidic ranges **(See Sheen col. line 49 - 55)**, but Komatsu and Sheen do not contemplate the exact silica to copper ratios contemplated by claims 55-59. Samad teaches that the biocidal power of biocidal copper agents is controlled by the available metal **(Samad col. 1 lines 39-41)**, and the water chemistry at large **(Samad col. 1 lines 33-54).** Komatsu also discusses varying the silica to copper ratio and performs efficacy tests to find suitable ratios **(See Komatsu in the examples).** So the amount of copper in the agent is a result effective variable. Therefore it would have been obvious to a person of ordinary skill in the art at the time of invention to optimizes the silica to copper ratio in the adjustable copper silicate compound of Komatsu in view of Sheen. *Discovery of an optimum value of a result effective variable in a known*

process is ordinarily within the skill in the art and would have been obvious, consult In re Boesch and Slaney (205 USPQ 215 (CCPA 1980)).

Response to Arguments

33. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

34. It is also noted that applicant has not traversed certain factual findings in the prior office actions. Namely, applicant has not traversed the factual assertion that the bacteria, protozoa, and fungi of claims 69-71 including bacteria, cryptosporidium and aspergillus are routinely present in natural waters. And it is therefore taken that these factual assertions are admitted. See MPEP 2144.03(C).

35. Regarding the electron spin resonance spectrometer readings and X-ray diffraction readings, these are intrinsic properties of the materials being produced. Moreover, once a product which is substantially similar to the product which is instantly being claimed is found, the burden shifts to applicant to show an unobvious difference. See MPEP 2113. So, in this case, although method claims are pending, applicant is attempting to base his argument for patentability on the electron spin resonance and X-ray diffraction characteristics of the product produced by the method. See Remarks pages 12 and 13. Therefore, applicant bears the burden of showing not just that these indicia are not specifically contemplated by the prior art, but that they represent an unobvious difference

between the product produced found in the prior art and the product which is instantly produced.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucas Stelling whose telephone number is (571)270-3725. The examiner can normally be reached on Monday through Thursday 12:00PM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

las 10-30-09

/Matthew O Savage/
Primary Examiner, Art Unit 1797